



# Six Los Alamos National Laboratory physicists elected 2020 Fellows of the American Physical Society

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LOS ALAMOS, N.M., Oct. 14, 2020—Six Los Alamos National Laboratory physicists have been elected Fellows of the American Physical Society this year. The Lab's 2020 APS Fellows are Luis Chacon, Andrea Favalli, Ralph Menikoff, Andrea Palounek, Nikolai Sinitsyn, and Blas Uberuaga.

"I'm pleased to see six members of our technical staff recognized through their election as Fellows of the American Physical Society this year," said John Sarrao, deputy director for Science, Technology and Engineering at Los Alamos National Laboratory.

"No more than one half of one percent of APS members are elected to the APS Fellowship annually. The honor bestowed on our scientists shows that the physics community highly values the contributions our newly minted APS Fellows have made to science and society. It's important to remember that research is a collaborative effort, particularly here at Los Alamos, and that their election as APS Fellows is an honor that all of us at the Laboratory share and celebrate."

The APS Fellowship Program recognizes APS members who may have made advances in physics through original research and publication, or made significant innovative contributions in the application of physics to science and technology. They may also have made significant contributions to the teaching of physics or service and participation in the activities of the APS.

Los Alamos National Laboratory's 2020 APS Fellows:

- **Luis Chacon** was nominated by the APS Division of Computational Physics for "seminal contributions in the development of novel algorithms for fluid and kinetic plasma simulation, both Eulerian and Lagrangian, enabling breakthroughs in the understanding of fast magnetic reconnection, and the impact of kinetic effects in strong plasma shocks and in ICF implosions." Chacon joined the Theoretical Division at Los Alamos as a Director's funded Postdoctoral Fellow in 2000, and became a staff member in 2002. He later joined the Fusion Energy Division at Oak Ridge National Laboratory from 2008-2012, and returned to Los Alamos in 2012. He is now a senior scientist of international stature in the Applied Mathematics and Plasma Physics group in the Theoretical Division at Los Alamos National Laboratory. Chacon is currently an associate and executive editor in the *Journal of Computational Physics*.

- **Andrea Favalli** was nominated by the APS Forum on Physics and Society for “outstanding application of the methods and underlying science of nuclear physics to the crucial issues of nuclear safeguards and security.” Favalli joined the Nuclear Engineering and Nonproliferation division at Los Alamos in 2009. His work has focused on nondestructive assay (NDA) of nuclear materials, ranging from new analytical approaches to experimental work. He has contributed to designing and implementing NDA measurement systems for nuclear material accountancy for nonproliferation throughout the world. He has been leading research activities into laser-driven nuclear physics at the Lab for applications in nuclear safeguards and security and for radiography for diagnosing dynamic experiments. Before joining Los Alamos National Laboratory, he spent about four years working as researcher at the European Commission, in Ispra, Italy, where his work focused on active neutron interrogation.
- **Ralph Menikoff** was nominated by the APS Topical Group on Shock Compression of Condensed Matter for “pioneering contributions to the fundamental understanding of materials under extreme conditions, including the physics and modeling of shock waves, detonation waves, equations of state, and reactive burn models for chemical explosives.” Menikoff came to the Lab in 1974 as a postdoc in the particle physics group. Two years later he became a staff member and joined the Detonation Physics group when it was first formed. He has been in Theoretical division for his entire career, and is currently in the Physics and Chemistry of Materials group. In 1990 he was awarded the Lab's Fellows prize for work on shock waves and the Riemann problem, which characterizes wave interactions and is fundamental to compressible fluid flow. Over the last 10 years, Menikoff has worked on developing a hot-spot model for solid high explosives that captures both the behavior for shock initiation and propagation of detonation waves.
- **Andrea Palounek** was nominated by the APS Forum on Physics and Society for “extensive work on the application of physics to national security in space, advocating on behalf of women and minority students in physics, and for unflagging efforts in launching the Four Corners Section of the American Physical Society.” Palounek joined the Lab in 1991, and most recently worked on special projects for the Weapons Program, following a stint leading and managing the Muon Radiography program. In 2018, Palounek retired from formal paid work at Los Alamos to concentrate on advisory and outreach activities for the Laboratory and the physics community at large.
- **Nikolai Sinitsyn** was nominated by the APS Division of Condensed Matter Physics for “outstanding and original contributions to spin noise spectroscopy, anomalous Hall effect, geometric phases, multistate Landau-Zener models, and many-body nonadiabatic transitions.” Sinitsyn held a post-doctoral fellowship at Los Alamos from 2007 to 2009, and joined the Lab as technical staff member in Theoretical division in 2010. In addition to the work noted in his Fellowship citation, Sinitsyn has produced influential results in interdisciplinary topics; he introduced geometric phases in stochastic kinetics, which describe numerous effects in nanomechanics; he also proposed the idea of “Safe Protocols” – the algorithm for aggregate centralized control of multiple power grid connected devices for smart-grid applications.
- **Blas Uberuaga** was nominated by the APS Division of Computational Physics for “the development of accelerated molecular dynamics methods and their application to the understanding of radiation effects in materials, including the amorphization resistance of complex oxides, and the discovery of a new mechanism for point

defect recovery at interfaces.” Uberuaga first came to the Lab as a postdoc in 2001, and has been a staff scientist in the Materials Science and Technology division since 2004. He has been involved at a range of levels on multiple Department of Energy–funded projects including a project dedicated to understanding the relationship between disorder and transport in complex oxides and research targeting the synergies between irradiation and corrosion.

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